भारतीय मानक
Indian Standard

IS 17534 : 2021

एम्बाल्मिग मशीन — विशिष्टि

Embalming Machine — Specification

ICS 11.140

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भारतीय मानक ब्यूरो
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April 2021 **Price Group 2**

Anatomy and Forensic Sciences Equipment Sectional Committee, MHD 23

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Anatomy and Forensic Sciences Equipment Sectional Committee and approval by the Medical Equipment and Hospital Planning Division Council.

Embalming machine, also known as cadaverous injector, is to be used for injecting embalming fluid in cadaver at much higher speed than normal gravity process.

The clause **8** of this standard call for an agreement between the purchaser and the supplier.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

Indian Standard

EMBALMING MACHINE — SPECIFICATION

1 SCOPE

This standard specifies the essential requirements for an embalming machine, also known as cadaverous injector.

2 REFERENCE

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below.

IS No./Other Publication	*Title*
1068 : 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium (*third revision*)
3624 : 1987	Pressure and vacuum gauges (*second revision*)
4034 : 1979	Specification for castors for hospital equipment (*first revision*)
5528 : 1985	Method of testing corrosion resistance of electroplated and anodized aluminum coating by copper accelerated acetic acid salt spray (CASS) test (*first revision*)
5680 : 1969	Rubber tubing for medical use
6009 : 1970	Method for evaluation of results of accelerated corrosion tests
6536 : 1972	Specification for pumps for handling volatile liquids
6911 : 2017	Stainless steel plate, sheet and strip — Specification (*second revision*)
12271 : 1988	Specification for laproscopic trocar and cannula
12992 (Part 1) : 1993	Safety relief valves — Spring loaded — Specification: Part 1 Design
12992 (Part 2) : 1990	Safety relief valves — Spring loaded — Specification: Part 2 Testing
IS/IEC 61010-1 : 2010	Safety requirements for electrical equipment for measurement, control, and laboratory use: Part 1 General requirements

3 TERMS AND DEFINITIONS

For the purpose of this standard, terminology and definition of various parts given below shall apply.

3.1 Cadaver — Dead human body that is used by medical students, physicians and other scientists to study anatomy, identify disease sites, determine causes of death, and provide tissue to repair a defect in a living human being.

3.2 Capacity — The full water capacity of the vessel, that is, total internal volume with lid in position.

3.3 Container — Vessel which is placed inside the outer body to contain the embalming solution.

3.4 Embalming — The preservation of human remains via inhibiting decomposition with the use of chemicals for the purpose of medical education or social reasons.

3.5 Safety Relief Device — Device which prevents the embalming machine from exceeding the safety pressure.

4 CONSTRUCTION AND COMPONENTS

For the purpose of this standard, various parts given below shall apply.

4.1 Cannula — Cannula as specified in IS 12271 shall be fixed at the end of rubber tubing and shall be used to inject the solution in the cadavers.

4.2 I.V. Stand — I.V. stand made of stainless steel shall be fixed on the unit for mounting cannula tubing and mains cable.

4.3 Level Indicator — The tank shall be fixed with a level indicator on the outer surface of the body of the machine for indicating the level of fluid in the inner tank.

4.4 Liquid Filling Nozzle — Liquid filling nozzles shall be made of stainless steel and fixed on top of the container to be used for filling embalming solution.

4.5 Mains Indicator — LED indicator for power supply mains ON and IN-USE shall be provided.

4.6 Portable Trolley — The unit shall be fitted with four castor wheels on the base for easy movement and handle bar with suitable grip should be provided for transporting/lifting. The castors shall be held securely in the frame by any of the methods of attachment specified in IS 4034 and shall also comply with the other requirements laid therein. The castors shall turn freely in their pivots but without any lateral play. The wheels shall run freely in the forks and shall not have movement in any other direction. The axle bolts shall pass through the fork (horn) and be well secured by nuts.

4.7 Pressure Gauge — The tank shall be fixed with a pressure gauge as per specified in IS 3624 in order to monitor the internal pressure of the tank when it is filled with embalming solution.

4.8 Pump — The unit shall consist of a dosing pump. The pump shall be capable of handling volatile solutions which are to be used in the embalming machine as per IS 6536. The pump shall have the capacity of fluid delivery rate upto 10 litre/h. The body and connectors of the pump shall be made of chemical resistance material.

4.9 Rubber Tubing — The tank shall be fitted with rubber tubing, as specified in IS 5680, suitable for injecting the solution.

4.10 Safety Valve — The tank should be fitted with a safety relief valve as per IS 12992 (Part 1) having appropriate gaskets.

4.11 Stainless Steel Tank — The inner tank should be made of stainless steel as per IS 6911 (X04Cr19Ni9) and should be able to store the embalming fluid.

5 WORKMANSHIP AND FINISH

5.1 The embalming machine should have adequate noiseless operation (< 50 dB).

5.2 The outer surface of body of the embalming machine shall be plated chromium over nickel in accordance with service grade no. 3 of IS 1068.

5.3 The embalming machine shall be supplied with suitable electric cord, plug, and suitable to operate on 220 volts, 50 hz, AC supply, single-phase electric power.

5.4 The embalming machine shall be compliant with IS/IEC 61010-1 covering safety requirements for electrical equipment for measurement control and laboratory use.

6 TEST METHODS

6.1 The coated/plated components shall be sufficiently corrosion-resistant and pore-free to pass the appropriate test specified in IS 1068 or IS 5528 for the particular service condition number. The performance rating shall be determined in accordance with IS 6009 to each tested article representing the relative freedom from defects at which coating is penetrated, with resulting the corrosion of the basis metal.

6.2 Rubber tubings to be used in the embalming machine shall conform to IS 5680.

6.3 The operability of safety relief valves at specified pressure and temperature shall be checked as per IS 12992 (Part 2) for compliance.

7 MARKING

7.1 The body of embalming machine shall be indelibly and clearly marked with:

a) Capacity/rating of embalming machine;
b) Manufacture’s name or trade-mark;
c) Unique device identification number; and
d) ‘Read instructions before use’.

7.2 The packages shall also be marked with make or manufacture’s trade-mark.

7.3 BIS Certificate Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

8 PACKAGING

The packaging of embalming machine shall be as agreed to between the purchaser and the manufacturer/supplier.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Anatomy and Forensic Sciences Equipment Sectional Committee, MHD 23

Organization	*Representative(s)*
Maulana Azad Medical College, New Delhi	Dr Sabita Mishra (***Chairperson***)
AIMED (Delhi)	Shri Rajesh Khatri Mrs Lalita Khatri (*Alternate*)
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Federation of Indian Chambers of Commerce and Industry (FICCI), New Delhi	Shri Vijay Kumar Dr Sandeep Sewlikar (*Alternate*)
Indian Medical Association, Delhi	Dr R. V. Asokan Dr N. V. Kamat (*Alternate*)
Kalam Institute of Health Technology, Visakhapatnam	Shri Kingshuk Poddar Shri P. Srinivasa Reddy (*Alternate* I) Shri Dilip Kumar Chekuri (*Alternate* II)
LNJN National Institute of Criminology and Forensic Science, Delhi	Dr K. P. S. Kushwaha Dr J. K. Modi (*Alternate* I) Dr Tanya Chauhan (*Alternate* II)
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Sri Ramachandra Institute of Higher Education and Research, Chennai	Dr (Lt Col) T. Vijaya Sagar Dr S. Senthil Kumar (*Alternate* I) Dr Venkatesan M. (*Alternate* II)
VMMC & Safdarjung Hospital, New Delhi	Shri Manoj Kumar Wahi Shri G. A. Sunil Kumar Sharma (*Alternate* I) Shri Manish Kumath (*Alternate* II)
BIS Directorate General	Shri Prakash Bachani Scientist 'F' and Head (MHD) [Representing Director General (*Ex-officio*)]

Member Secretary

Dr Pradeep Dua
Scientist 'C' (MHD), BIS

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